

Observations

on

Functional Derangement of the Liver

Spice quam tumet magno fœur Andre Majus. — Martius.

by

Papier March 22^d
1824

John Andrews

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OHIO.

Nov^r 1820^d

12th March

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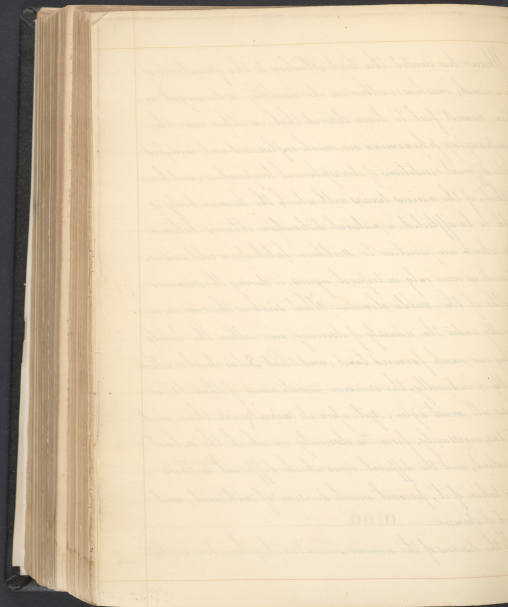
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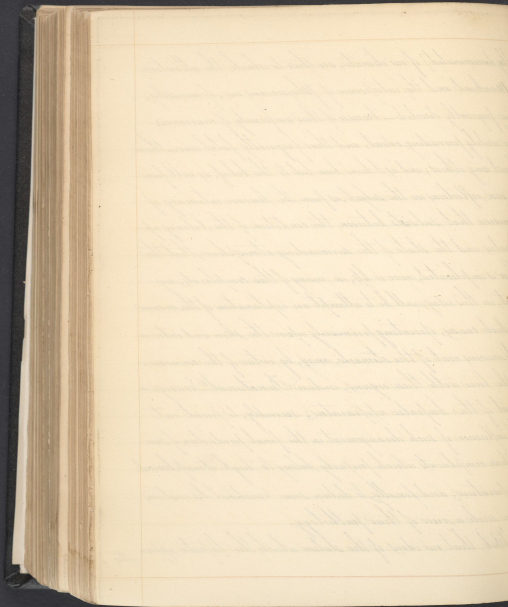
Whoever has devoted the least attention to the operations of the animal machine, either in its healthy, or deranged condition, cannot fail to have observed that, in either case, the accompanying phenomena are much influenced and modified by the different conditions of atmospherical temperature; and hence it is that, of the various diseases with which the human body is liable to be afflicted, a natural distinction obtains between those which are peculiar to northern latitudes, or cold seasons, and such as occur only in tropical regions, or during the summer months of the milder climates. That such is the case we are annually under the necessity of observing, even within the limits of this our much favoured land; and that Solar heat is, either directly or indirectly, the common remote cause of these latter diseases, all must agree; yet, upon its *modus operandi* there, must, and does, necessarily, from the obscurity in which the subject is involved, and the different views which different authors have taken of it, prevail much division of sentiment, and discord of opinion.

As the diseases of the summer season [as they have been emphatically



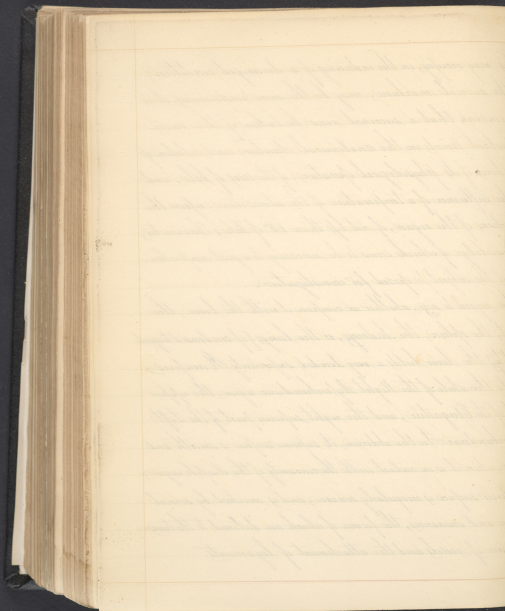
ally determined) of our climate, are those to which the attention
 of Mankind and the interference of Physicians are, of necessity,
 more frequently directed—because of their uniformity of occurrence,
 their widely prevailing extent, and their frequently fatal issue—than
 almost any others; and as I have been led to the belief, as well from
 my own reflecting on the subject, as from the known intimacy of
 connexion that subsists between the condition of the biliary ap-
 paratus and the state of the surrounding atmosphere, that the
 Liver is implicated, more or less, in many of these complaints, my
 object, in this essay, will be to attempt an explanation of the manner
 in which causes, operating primarily upon the skin and inter-
 nal mucous coat of the stomach, may, by virtue of the connexion
 of the liver with these organs, induce Functional Disorgani-
zation of the hepatic apparatus; secondly, to point out
 the influence of such derangement in the final production of some
 of those complaints which properly belong to high atmospherical
 temperatures; and finally, to deduce some practical observations
 from such a view of their pathology.

But, that our ideas of the action which the hepatic appa-
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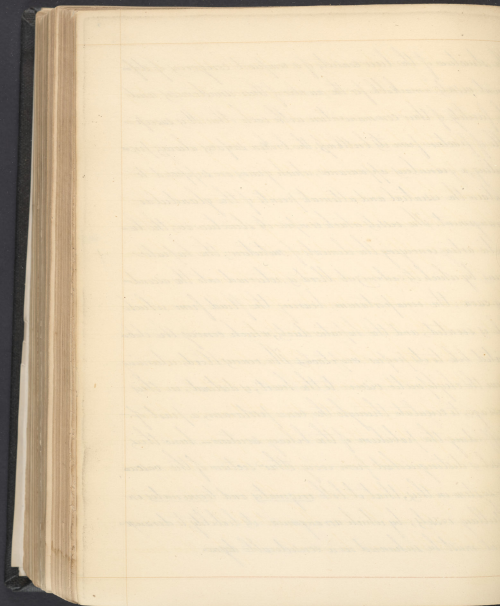


may occupy, in the inducing of a deranged condition
of the animal machine, may be the more conspicuous, it is
incumbent that a succinct view be taken of the more
important points in the anatomical structure and relations of
the liver; of its physiological operations; of the uses of bile; and
of the influence of a temperature of the atmosphere, above the
functions of the organ, of not less than 85° of Fahrenheit's thermometer;
a knowledge of which seems to be necessary to a just comprehen-
sion of the subject proposed for investigation.

In regard to size, whether we compare it with the brain, the
heart, the spleen, the kidneys, or the lungs, [if condensed to equal
density] the liver holds a very decided superiority. It occupies
nearly the whole of the Right Hypochondriac region; the upper
part of the Epigastric, and the right superior part of the Left
Hypochondriac. In the abdomen, its superior surface is smooth and
convex, where it is in contact with the concavity of the diaphragm;
its inferior surface is irregularly concave, and is marked by several
furrows and eminences, the former of which are destined to the trans-
mission of vessels and the attachment of ligaments.



the structure of the liver consists of a compact congeries of different vessels, remarkable for the number of their anastomoses and the facility of their communication with each other. It is susceptible of fracture from its brittleness, the broken surfaces always presenting a granulous appearance, which grains are supposed to contain the essential and ultimate principle of the glandular arrangement. The vessels which compose its structure are, the hepatic artery, conveying the elements of nutrition; the hepatic vein, by which its carbonized blood is returned into the ascending cavæ; the vena portarum, bearing the fluid from which bile is secreted; and the hepatic ducts, which convey the elaborated bile to its proper receptacles. The venous blood, returning from the chyliferous viscera to the heart, is destined, in its passage, to circulate through the vena portarum, a part of it affording the nutriment of the biliary secretion—hence this vessel is distinguished from every other section of the venous system in this, that it both originates and terminates in a biliary vessel; by which arrangement its liability to derangement must be enhanced in a considerable degree.



The hepatic ducts, ductus choledochi, and gall bladder are lined by a continuation of the mucous or lining tissue of the alimentary canal. The nerves of the liver are derived from the splanchnic ganglia of the splanchnic nerves; they surround the hepatic artery and vena portarum, and accompany them in their ramifications throughout the liver, being enclosed in Glisson's capsule. Like all the other abdominal viscera, the kidneys alone excepted, the liver receives a complete investment from the peritoneum; the process of which, acting as ligaments, together with its connection with the vena cava, serve to maintain it pretty steadily in its relative position with the other abdominal contents.

From the earliest dawn of Physiological science, down to the present day, discrepant and unsettled opinions have prevailed among the cultivators of that science, relative to the precise functions of the liver. The once popular, but now exploded dream of older times, assigning to it the truly important performance of elaborating blood from other fluids of the body, no longer occupies our attention. The great Haller says, "when I reflect that there is no bile required in the fæces, there being no

* *Ans* Chemical Dictionary - article Bile

no food received; when, again, I see that the liver is of great size in the fetus and not small like the lungs, which are destined to an operation in the economy after birth, I cannot but suspect that it has some other uses in the fetus than the secretion of bile. Without, however, entering into the ambiguous wilds of conjecture, from which we should be certain to escape, little benefited and less instructed, we may safely conclude, since Nature cannot be justly accused of supererogation in any part of the human body, that the importance of this organ in the animal machine, is fully commensurate with its magnitude. Certainly, the secretion of bile is the most important and it answers.

Healthy bile is of a yellow colour intermixed with green, of a plastic consistence like thin oil, with an odour somewhat like that of musk, and a very bitter taste. * It is well ascertained to be possessed of antiputrescent properties—properties which must be of the highest importance, particularly in the lower portions of the alimentary canal. An other use which has been assigned the biliary secretion is, that it performs an important part, in conjunction with that of the pancreas, in completing

*See Concord Memo. - vide Ford's Study of Medicine Vol. 1st Physiological Memo. to
Diseases of the Digestive Functions page 12.

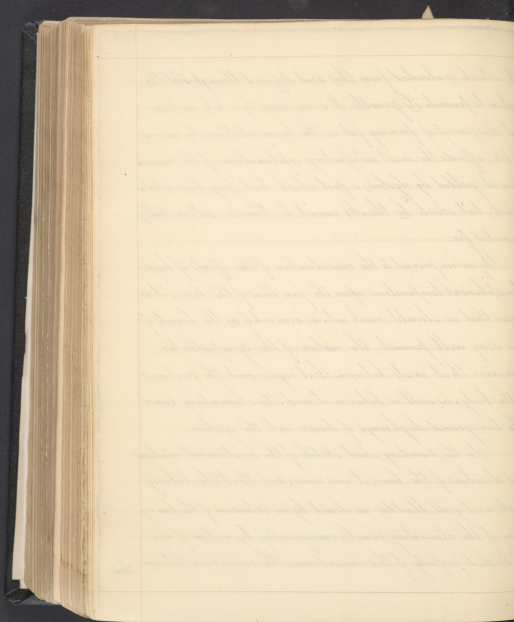
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completing the process of chylification, in animalizing that fluid,
and furthering what may be properly enough termed the duo-
dinal digestion. It also imparts the yellow, termed the healthy
colour to the faces. But the great and most generally ac-
knowledged service of this important location consists, in its
stimulating the intestines to a due performance of their peristaltic
action — a motion, by which they are enabled to propel their
contents continually forward, often in opposition to the attraction
of gravitation, thereby exposing the ingesta to the action of
the lymphatics, and finally, expelling from the canal what
is now become foreign, and, if retained, would soon be irritating
matter. Yet, as if nature would bear to no law, easy have occurred
in which the peristaltic action has been duly continued, and reg-
ular stools produced without any intermission of bile, and even
where there has been no gall bladder, no any duct leading
from the liver to the duodenum. And from this fact, as well
as from various others, an indubitable physiologist conceives
one of the offices of bile to be that of converting mucus or the
refuse matter of the chyle, when conveyed into the colon, into fat.

*9. Ur.

fat, which is absorbed from this and diffused throughout the system to promote its growth. It is considered by a late author that the process of forming fat in the lower intestines, by means of bile, affords the most satisfactory explanation of the nourishment yielded by clysters; a fact which had long been established, but which he thinks cannot be otherwise satisfactorily accounted for.

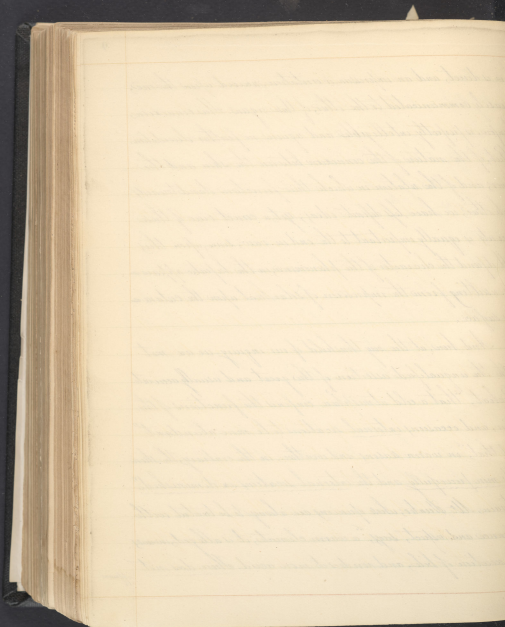
Before we proceed to the consideration of the effects of hepatic atmospherical temperature upon the functions of the liver; it is proper that we should mark out, as accurately as the limits of this essay will permit, the nature of the sympathetic connexion that exists between that organ and the surface of the body, as well as between it and the alimentary canal - the two grand highways of disease into the system.

In the preceding short sketch of the anatomical relations and structure of the liver, it was remarked that the biliary ducts and gall bladder are lined by an extension of the lining tissue of the alimentary canal; consequently, by virtue of an established property of this membrane, the connexion between them



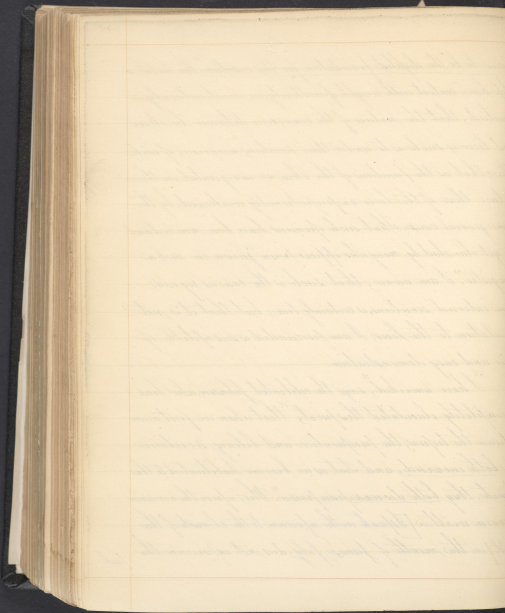
is direct, and an impression, or irritation, accord upon the one, is easily communicated to the other, of these organs. This connexion, therefore, is perfectly intelligible and requires no further elucidation. But, of the nature of the connexion between the skin and the liver; and of the relation in which their functions stand towards each other; we have less definite ideas, yet a correct view of these presently is equally important to the end in view; since, upon this will depend the character of the phenomena, in the hepatic apparatus, resulting from the impression of solar heat upon the cutaneous surface.

And here, at the very threshold of our inquiry, we are met with the unqualified assertion of the great and usually accurate Rechat, "that a cold atmosphere confines the functions of the skin, and occasions internal secretions to be more abundant" and that, "in warm seasons and weather, in the contrary, the skin acts more powerfully and the internal secretions are diminished." Again, Mr Hunter; whose opinions are always to be treated with deference and respect, says, "a warm climate, it is alleged, increases the secretion of bile, and renders it more acid. There does not



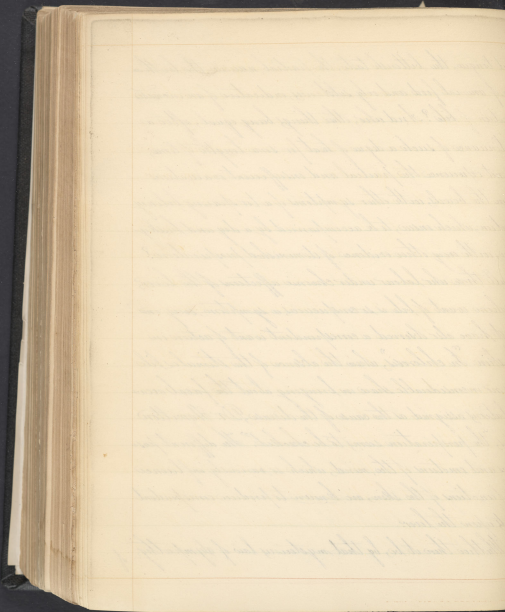
appear to be the slightest foundation for this assertion." Then we turn
 here; "content with weight of authority," we must certainly
 conclude, that the nature of the connexion between the skin
 and liver is such as to render their secretory vicarious of each
 other; that as the functions of the skin are invigorated in their
 activity, those of the liver are proportionally weakened, by the
 same general cause. That such opinions have been received and
 are yet cherished by many who appear *prope* "jurati in verba
 magistri," I am aware; that such is the case as regards
 some internal secretions, is certainly true; but that it is not
 a relation to the liver, I am persuaded is susceptible of
 fair and easy demonstration.

"I have remarked," says the celebrated Johnson, who has
 so completely elucidated this point, "that when we first arrive
 between the tropics, the perspiration and biliary secretions
 are both increased, and that as we become habituated to the
 climate, they both decrease, *prope* passim." Now, upon the accession
 of warm weather [I speak with reference to the climate of the
 U. S.] in the month of June, or July, does not experience the *fact*



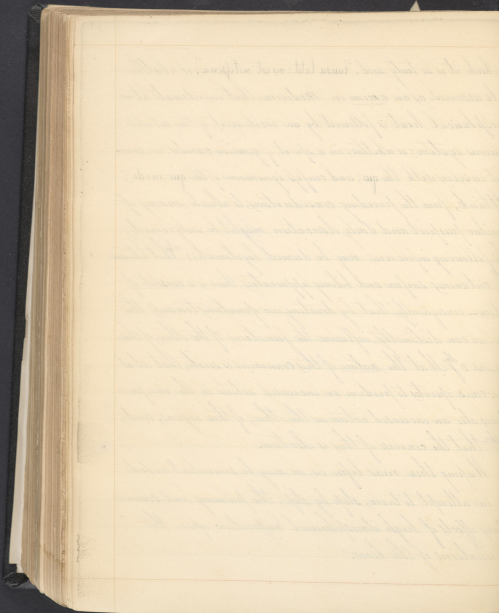
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and tongue, the bitterish taste, the partial nausea, the loathing
of animal food and oily substances, indicative of an increased
secretion of bile? And who, these things being equal, after a
continuance of such a degree of heat for some length of time,
does not experience the partial and insufficient evacuations
from the bowels, with other symptoms of a too sparing biliary
secretion, which must, to be accompanied by a dry and shaggy
skin, with every other evidence of diminished perspiration?
In all those who labour under chronic affections of the liver,
in whom want of bile is so conspicuous a symptom, every one
must have also observed a correspondent want of action in
the skin. In *cholestis*, where the absence of the stimulus, bile
has no inconsiderable share in bringing about the facial accu-
mulations assigned as the cause of the disease, Dr. Hamilton
says, "the perspiration seems to be checked." The different pas-
sions and emotions of the mind, which so variously influence
the functions of the skin, are known to produce correspondent
effects upon the liver.

Whether then it be, by that mysterious law of sympathy, of

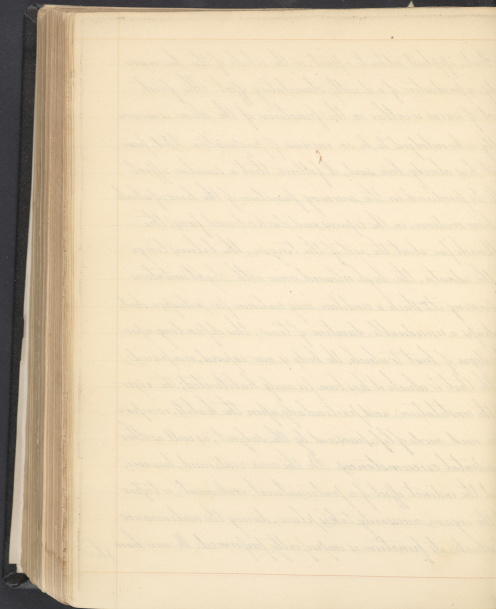


for which it is so truly said, "causa latet: vis est notissima"; or whether it be assumed as an axiom in Medicine, that inordinate atmospheric heat is followed by an excitement of the whole viscous system; or whether, in a spirit of genuine candor, we content ourselves with the quæ, and confess ignorance of the quæ modo; I think, from the preceding considerations, to which many of similar purport and daily observation, might be subjoined, the following inferences may be deemed legitimate: ^{1st} that between the cutaneous surface and biliary apparatus, there is a consent of action—consequently, that by directing our operations towards the one, we can distinctly influence the functions of the other, of these organs. 2^d That the nature of this connexion is such, that what one causes operates to produce an increased action in the one, produces also an increased action in the other, of these organs; and, ^{3^d} that the converse of this is also true.

Keeping these views before us, we may be somewhat aided in our attempt to trace, step by step, the primary and secondary effects of high atmospheric temperature upon the functions of the liver.



Heat, applied either to a part, or the whole of the human body, is productive of a directly stimulating effect. The first effect of warm weather on the functions of the skin, is universally acknowledged to be an increase of perspiration. But, from what has already been said, it follows, that a similar effect will be produced on the secretory function of the liver; of which we have evidence, in the ruddy and dark coloured face, the yellowish fur about the root of the tongue, the bilious tinge on the adnata, the high coloured urine with slight emulsion on passing it. Such a condition may continue for, perhaps a short, perhaps a considerable, duration of time; this depending upon the degree of heat to which the body is now exposed, compared with that to which it has been formerly habituated; the vigor of the constitution; and particularly, upon the habits, occupation and mode of life, pursued by the subject, as well as other incidental circumstances. In the case continued, however, and the indirect effect of a preternatural excitement, or labor of the organs, necessarily takes place, during the continuance of which, its function is imperfectly performed. We now have



phenomena quite the reverse of the preceding; a deficiency both of bile and perspiration, corresponding with their previous excess, results; the skin is pale, collapsed and arid; the appetite is, morbidly craving, or totally extinguished; the fecal evacuations sparing, infrequent and indurated; there is neither rest nor fatigue from the slightest exertion, whilst the mind, partaking of the habitude of the body, engages in study with reluctance.

These torpid periods, at first but of short continuance, and perhaps not very distinctly characterized, are gradually prolonged in their duration, until finally a total suspension of action results, and a complete suppression of the biliary secretion takes place.

The secretory function of the liver being thus impeded, whilst the hepatic veins afford an inadequate outlet to all the fluid which is brought to the organ, congestion of the portal system, to a greater or less degree, is the necessary result. This is evident, not only with reason and experience, but also with analogy. Thus, when the Germanizer, or the Debauchee, belabors himself to his ordinary practice, the stomach, for a time, accommodates itself to its additional duty; sooner or later, however, as if destined to perform.

*
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perform but a certain quantum of duty, it manifests an insensibility to the excessive or preternatural stimulus, its periods of exertion are gradually curtailed, until it finally admits accumulations, without an apparent effort to dispose of them.

Observation, however, proves, that without the co-operation of other causes, atmospherical heat, acting upon a healthy constitution, is rarely followed by a so disastrous consequence.

Dr Humboldt remarks, that, "the burning province of Guiana, the coast of Vera, and the plains of Caraccas, prove that excessive heat, alone, is not unfavourable to human health."

Since it is that, in the variable climate of the U.S.A. congestive state of the *vena portarum* is usually brought about by the influence of other causes, than those from excessive action, viz the application of cold, or damp, or these combined, to the surface of the body. Thus, says Bichat, cutaneous exhalation is increased by the action of caloric on the body, the skin being more expanded and deeper coloured from the increased afflux of blood to it. This excitement of the skin renders it more fit to be influenced by external agents, and to influence in its turn

*In his work on Dysentery

†First Ling. vol 1st. Goldswell.

all other organs. Surely the same holds in regard to the liver. Therefore, when it is placed in a condition, by previous vacuity =
want, "more fit to be influenced by external agents," a very
slight vicissitude in the temperature of the atmosphere, or
exposure to a moderate degree of cold in any way, which is always
assisted by the conjoint operation of damps, easily induces a torpor
of the extreme vessels, both of the surface and of the con-
ductors, by which both their actions are arrested, and engorge-
ment of the liver ensues.

In this we have an elucidation of the apparent paradox
of Dr. Mead, that cold is the cause of almost all the dis-
eases in hot climates to which climate alone is necessary. The
observation of Vallon, that both in hot climates, and in the
best seasons of mild climates, occasional falls of rain are partic-
ularly followed by an epidemic cholera, is, in this view, found
to be based upon correct and established principles, which,
withstanding, was opposed to all principle agreeably with
his view of the pathology of that disease.

But it often happens, that instead of the surface of the body

* Related in Beech's Medical Jurisprudence.

body, the fungous coat of the stomach, receives the first morbid impression which results in the production of functional derangement of the liver. When an article is taken into the stomach, the effect of which is to produce an imperfect or morbid stimulus there, this is extended, by continuity of structure, to the liver also; and the first effect will be an increased and somewhat irritated biliary secretion, but, as a consequence of this morbid excitement, to per ensue, the hepatic function is impeded, and a congestive state of the portal circulation inevitably results. Thus it is that, ascient food and other acid ingesta; in one case, an excessive dose of tartar emetic, and other irritating substances, have proved the exciting causes in sporadic cases of cholera morbus. Yet it is not to be concealed, that, in many such cases, the increased secretion, resulting from the primary irritation, may produce disorder of the intestinal canal sufficient to demand our attention; but, in my opinion, the secondary effects are always of a still more serious cast.

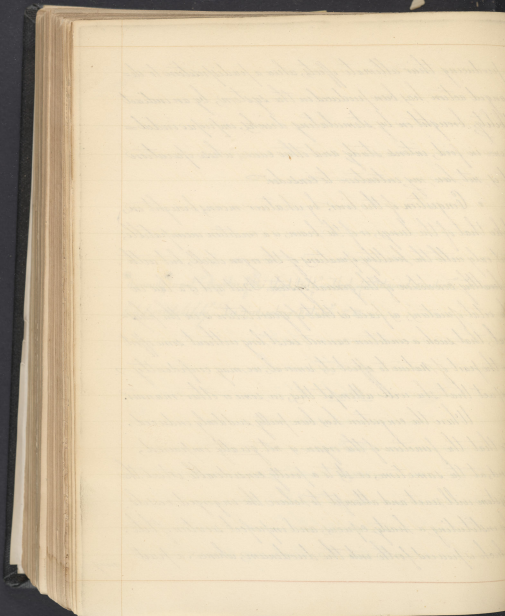
It might here be added that, in all cases, the causes which have already been considered may be much assisted in

* Various terms "stimulus of the blood itself," or that of "retained secretion," "accumulated excitability" "Vis Mediatrica Naturæ" &c.

producing their ultimate effects, when a predisposition to dis-
ordered action has been produced in the system, by an indirect
excitability, brought on by stimulating drinks, improper indul-
gence in food, intense study, and other causes, whose operation
it is not here my intention to consider.

Congestion of the liver, by whatever means brought on,
like that of the lungs, or of the brain, is a condition incompatible,
not only with the healthy operations of the organ itself, but with
a healthy condition of the general system. But as it is a law in
the vital operations, as fixed as that of gravitation is in the phys-
ical, that such a condition cannot exist long without some effort
on the part of Nature to effect its removal, we may confidently
expect that she will attempt this, in some or other manner.

When the congestion has been pretty suddenly induced,
so that the function of the organ is not greatly impaired,
and, at the same time, exists to a pretty considerable extent, the
system will react and attempt to relieve the engorged vessels,
by instituting a hasty, copious, and imperfect secretion of bile,
which is poured forth into the duodenum, whence, a part may



ing, regurgitated and be rejected from the stomach, a part turned
 inwards and be expelled with the contents of the bowels. The
 appearance of bile forms an important link in a chain of sym- +
 ptoms which nature has instituted, as salutary in themselves, but
 which has been attributed the name, *Cholera Morbus*.

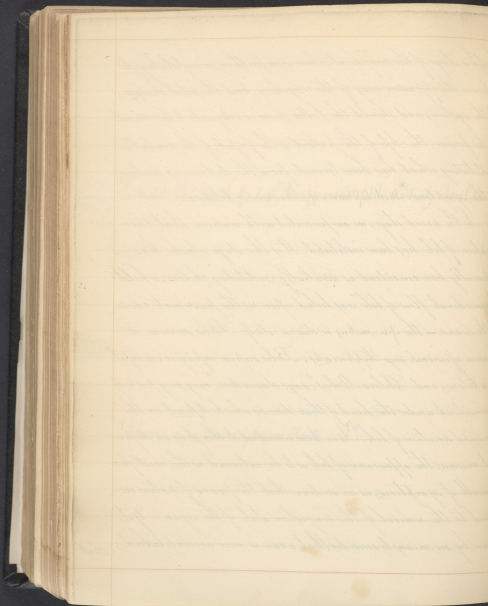
This disease therefore, as it almost always presents itself, we must
 necessarily view; contrary to the generally received opinion, as
 naturally divided into two distinct stages; each presenting
 phenomena peculiar to itself, and each exacting treatment
 inapplicable to the other. In the first stage, there is present a
 congestive state of the liver; and a deficiency of blood in other parts
 of the body, giving rise, when severe, to that condition of the system
 which in fevers is termed a *collapse*. There is now an irregu-
 larity in the general circulation, and an imperfect supply of
 blood to the brain, the countenance is shrunk and torpid;
 the vision dim, the pulse feeble and irregular, the powers
 of the system oppressed, the extremities cold or assume a lead
 appearance, and covered with large rolling drops of sweat, general
 restlessness, distressing anxiety, with nausea and vomiting attend.

* *Mort de Ghien* [death of a dog] the appearance of bile is entirely absent. *Curtis.*

† *Johnson* - in his *Diseases of Tropical Climates.*

In this stage of the complaint, there is on both a manifest struggle between the depressive energy of the congestion, and the vital energy of the system; and should the latter prove inadequate to the removal of the former, the life of the patient is the subject of the contest - constituting what has been termed, from the distressing nature of the symptoms, *Mort de Chien, or spasmodic Cholera.

In the second stage, we are presented with evidence that the secretion of bile has been instituted. It is this stage which has generally been considered as essentially constituting cholera, whilst the inordinate flow of bile was looked upon as the proximate cause of the disease - the ipso morbo, or disease itself. "Bilis sursum ac deorsum effusio," says Hippocrates; "Bilis supra infraque eummit," says Celsus; and, "Cholera Morbus," says Saunders, may very properly be considered under the head of those diseases which depend on the increased secretion of bile. As we have considered it, though in an imperfect manner, the appearance of bile is to be welcomed as the most favourable of symptoms, as an evidence that the power of nature is equal to the removal of the congestive state of the organ. Yet, we are by no means to consider that a cure is now accomplished; that



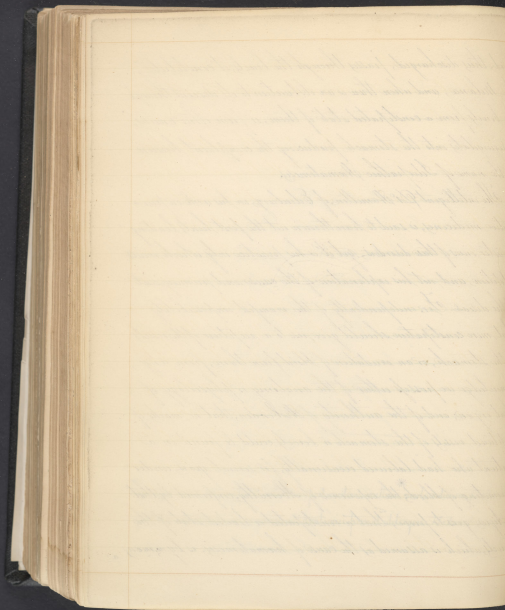
that our part is now but to look on, and observe nature work out
 her own relief. Nature, although she may frequently adopt the
 most effectual, does not always select the most lenient, or even
 the safest means for her relief; so that her salutary efforts may,
 of themselves, prove distressing; nay, they often do prove even danger-
 ous and fatal: thus, in the stead of hæmorrhage from external
 vessels, blood is often effused upon internal and vital organs; in
 the place of a mild, proper, and necessary degree of inflammatory
 action, suppuration and gangrene have often to be contended
 with. He who formed us, and gave us life, designed it so!

But, to return from this, it is hoped, not useless digression, it
 sometimes happens, when the secretory vessels are incompetent to the
 task of forming even imperfect bile, when perhaps the accumulation
 of blood has been more gradual, and the functional derangement
 greater; whilst the congestive state is extended to those organs whose
 circulation is associated with that of the liver, that relief may be
 afforded to the organ, by the escape from it, through the fœcal bil-
 iary, of a portion of blood, which, by passing along the ductus
 communis, will descend into the duodenum. When the venous blood

*
— eius tamen, ventriculus et intestina, post mortem, nullum morbovindicium ferbant,
quod due expulsiōni ac sagacissimi anatomici possent datergen. Heberden.

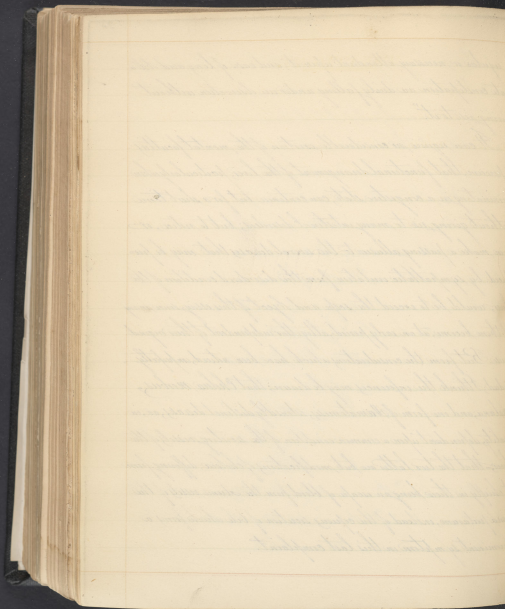
and, thus discharged, passing through the bowels, it constitutes
Melana; and when there is an obstruction to its descent through
the bowels from a constipated state of them, or from their ceasing
to regulate into the stomach, producing the complaint known
by the name of Idiopathic Hematemesis.

The intelligent Dr. Hamilton, of Edinburgh, in his work on pur-
gative medicines, is said to have thrown out the first hint leading
to the origin of these disorders; yet it is his practice only which merits
reprobation, and, not his explanation of the cause and primary seat
of the disease. For, independently of the manifest impossibility
that mere constipation should give rise to a rupture of the vessels
of the stomach, or an exudation of blood from them, from any
knowledge we possess either of the anatomy or physiology of
that organ; and of the authority of Dr. Borden, that no marks of
ruptured vessels of the stomach or bowels could be found in a
patient who had laboured occasionally, for several years, under
a vomiting of blood; the experience of Abernethy, confirmed by that
of Sympson, goes to prove, that a constipated or loaded state of the
bowels, which is assumed as the cause of hematemesis, is by no means



regular or necessary attendant upon it; and cases of long and obstinate convalescence are daily falling under our observation without giving rise to it."

It can require no considerable exertion of the mental faculties to perceive, that functional derangement of the liver, particularly when terminating in a congestive state, can continue but for a short time without giving rise to many intestinal disorders; but to notice, or even make a passing allusion to the several diseases that may be produced by sympathetic irritation from the disordered condition of the liver, would be to exceed the scope and object of this essay, since many of them become, at an early period, altogether independent of their original cause. But from the considerations which have been noticed, on perfectly usual, I think the inference may be drawn; that Cholera, morbus, dysentery, and one form of Hemorrhoids, are, in reality, dependant upon a common condition of the secretory vessels of the liver; that the two latter are but modifications of cholera, differing from it chiefly in there being an escape of blood from the extreme vessels of the mesentericum, instead of the copious secretion of bile which forms a prominent symptom in this last complaint.



TREATMENT.

Although we are no longer taught to enter upon the treatment of disease under the influence of a delay in the decisions of a "vis medicatrix nature", yet, in the case under consideration, it is proper that we should pay some attention to the means often resorted to by nature, and by which we have seen relief is, not infrequently, afforded; in as much as we may thus gather useful instruction both as to the nature and treatment of the disease, and as art, here, will be the more successfully directed, as it the more scrupulously aims to fulfil the indications pointed out by Nature. In the disease, the treatment of which we are about to consider, and which consists in an interruption of the secretory function of the liver, and a consequent congestion of the vena portarum, we have seen that nature's first effort is, to re-establish the healthful condition of the organ, by renewing the habit of secretion; that when she is unequal to this task, a temporary, and sometimes a permanent, relief is afforded to the system generally, and to the liver in particular, by the escape of dark, venous blood from the engorged vessels, and that thus the removal of this congestive state of the

TREATMENT.

the vessels often contributes to renew the healthful action of the organ. The indications of treatment, then, are plainly pointed out to be, I. To renew the secretory action of the liver; and remove the congestive state of its vessels. II. To correct any disordered action of these organs, whose connexion with the liver, may cause them to be deranged.

From what has already been said, it must be evident, that, to fulfil the first indication, such remedial means must be employed as will stimulate the torpid and inactive vessels of the liver to a more peaceful and vigorous exertion. Long tested experience has proved that, of the various articles of the materia medica, there is none whose action is more immediately, may I say specifically, directed to this organ, than that of the milder preparations of Mercury, and of these the protochloride is the one whose effects are most uniform and most to be relied on. When a patient, who labours under a derangement of the biliary function, takes a small dose of calomel at bed time, it commonly happens that, instead of the restlessness of former nights, he sleeps more calmly and soundly than usual, and on a rise in the

* Hye on Marasmus.

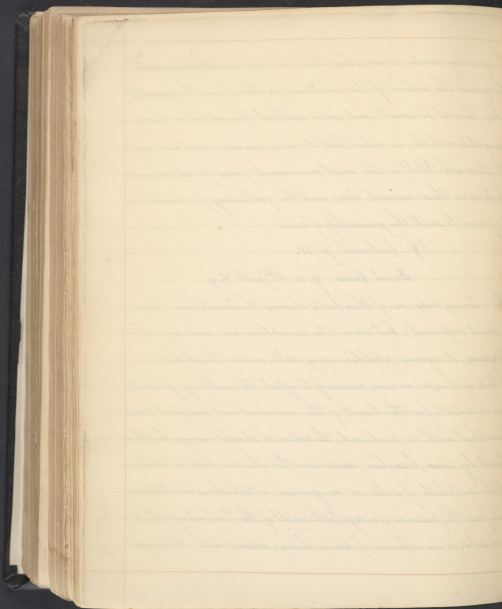
the morning under a conviction that he was his last to breathe^{*}
 procure the action of the medicine on the liver, the quantity
 should be small, and given without the addition of any
 purgative article, in order that it may remain some time in
 the stomach. Pill is the most convenient form for its adminis-
 tration in these minute doses, and the following formula will
 be found to suit the generality of cases.

℞. Calomel gr. iv.

Trud. Gum. q. s. St. pill. ℥ij.

In ordinary cases, one of these pills during the twenty four hours
 is found sufficient; but where the symptoms are more urgent,
 & severe, it requires repetition every sixth, or even third hour.

But as it is, in no case, necessary to affect the salivary glands,
 and in order to free the bowels of the increased and imperfect secre-
 tions that will be produced, the calomel should always be fol-
 lowed by some laxative medicine. For this purpose, a solution
 of the sulphate of soda, or magnesia, or (which is most phre-
 natic, from the judicious use of a vegetable acid) of the tartaric of potash
 and soda, or an infusion of senna leaves, answers well. A draught of

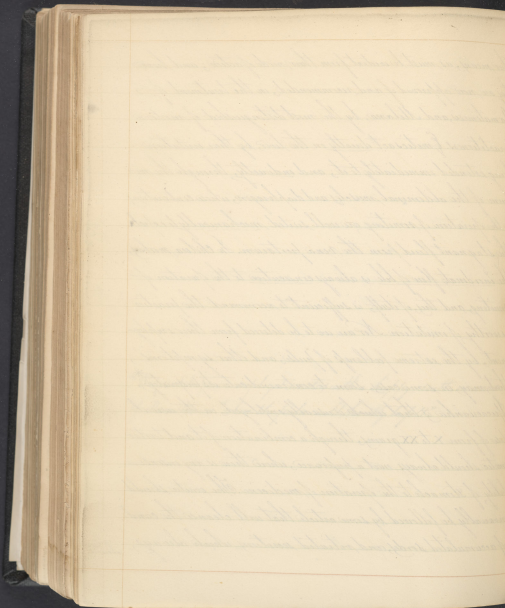


One of these purgatives should be taken, from three to six hours after the pills; or the latter may be taken on going to bed at night, and the former on rising in the morning. Two or three grains of the officinal preparation of mercury formed the blue pill, may be substituted for the preceding, and, taken in the same manner, may answer equally well. This practice should be pursued in, until the facial eruptions assume a healthy and natural appearance; for then, and not till then, are we assured that the functions of the liver are regularly and duly performed. Among the first evidences that the secretion of bile has been renewed, will be the sensation of some glowing heat, in the region of the bowels, attended by a rippling and gurgling effect, which symptom recurring frequently is always a favourable prognostic.

But this is not the only means by which the liver may be excited from its lethargic condition, to a renewed and vigorous action. Emetics, safely and efficiently, produce the same effect. Indeed, when the secretory function appears to be greatly impaired, particularly when there has been some evidence of its condensation in the escape of dark greenish blood from the region, emetics are preferable to any other.

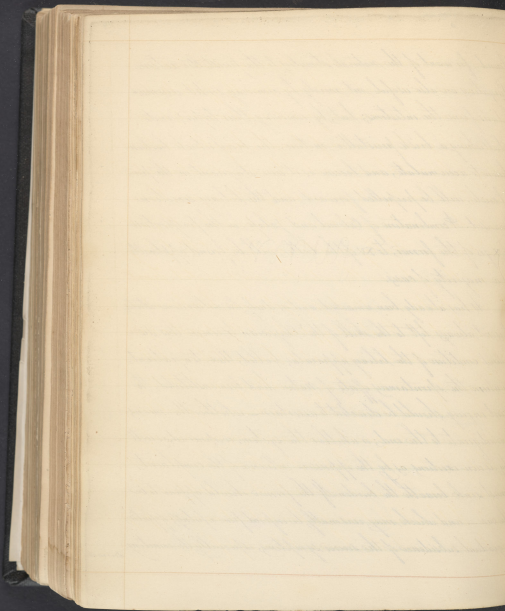
* Professor Chapman employed emetics with a happy result, in a case of *Hæmaturia* "when the pulse could hardly be felt."

means, as must be evident from their mode of action; and hence
 they are now approved of and recommended, in the treatment of
 Cholera, and Melana, by the most distinguished of modern
 practitioners. Emetics act directly on the liver, by their irritation
 being extended immediately to it; and indirectly, through the me-
 dium of the abdominal muscles and diaphragm, whose contractions
 in the operation of vomiting are well suited, mechanically to expel
 the stagnant fluid from the vena portarum. In Cholera, moreover,
 the inordinate flow of bile is always consecutive to the operation of
 vomiting, and this, of itself, is sufficient to recommend the practice
 as worthy of imitation. Nor are we to be deterred from their employ-
 ment, by the extreme fullness of pulse, and other symptoms,
 that may, in some cases, seem to contraindicate its propriety.*
 Precipuantha is that which is usually employed, in the usual
 dose of from \times to $\times \times$ grains, though a combination of it and tartar
 emetic should always meet a preference, where there is any insensi-
 bility of Stomach to the operation of medicine. The emetic should
 usually be followed by some article that will cleanse the canal
 of accumulated solids, and vitiated secretions, which always sound

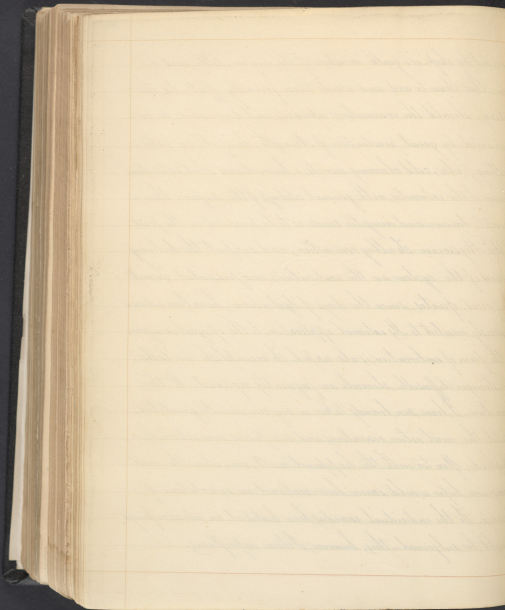


ground, for want of the natural stimulus to the peristaltic action. Purgatives are also useful, not merely by removing solid accumulations from the intestines; but, by removing their tops; and establishing a brisk peristaltic motion; the blood which has been known to accumulate, and become as it were stagnant in the portal circle, will be propelled forward, and the biliary secretion increased. A combination of Calomel and jalap, in the proportion of x grs of the former, to xv of the latter, will be found applicable in a majority of cases.

It has already been remarked, and of daily observation demonstrates, it is not always left to the skill of the Physician to remove this disordered condition of the biliary apparatus. Galled, then, to a patient, in whom the spontaneous efforts of Nature had been instituted, the first inquiry should be directed to ascertain — whether the means are adequate to the end; or whether the system, disordered, as well by its own exertions, as by the oppressive influence of the complaint, must sink beneath the burden. If the former should appear to be the case — and which may reasonably be inferred from a subsiding of the severe symptoms, especially the vomiting, decreased

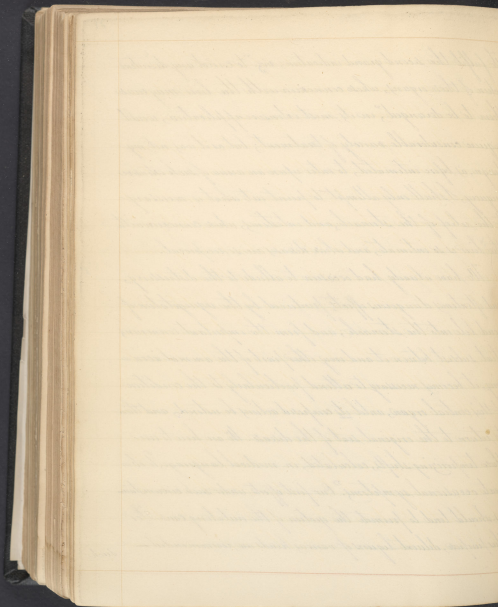


preceded by sleep, or a gentle moisture of the surface, little need be
 done other than to aid and assist their friendly efforts, in the
 contrary, should the evacuations upwards and downwards be ac-
 companied by great prostration of strength; low, febrile, or inter-
 mittent pulse; cold clammy sweats; a hurried and short, inspiratory
 action of the intestines, with general coldness of the surface; then a
 prompt, decisive and energetic course is to be pursued on the part
 of the Physician. It allay commotion, and support the declining
 powers of the system are the indications now presented. To most
 the ferrous, quater, since the days of Sydenham, have been advo-
 cated, resorted to. Its external application to the epigastrium again,
 in the form of embrocation, is also useful. To accomplish the latter,
 the stronger diffusible stimuli are frequently required. At this
 juncture, I have seen brandy taken in, very considerable quantities,
 whilst the most active, revivifying and sinapisms were externally
 applied; often too with the happiest result, even where the most
 sanguine hope would scarce have ventured an expectation of
 success. To the individual remedies here hinted at, an extensive passage
 might be subjoined - this, however, I deem superfluous.



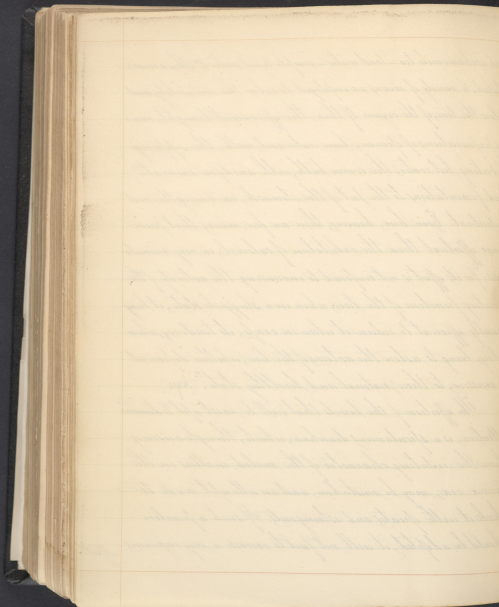
To fulfil the second grand indication, viz. "to correct any disorder of these organs, whose connexion with the liver may cause them to be deranged," in its most extensive application, would require considerable variety of treatment; but as it was, not my design, as before intimated, to enter upon an arena of such extensive inquiry, I shall only attempt to point out what is necessary to the relief of the stomach, and intestines, whose connexion with the liver is so intimate, and whose diseases are so reciprocal.

We have already had occasion to allude to the distressing, and oftentimes dangerous effects, produced by the regurgitation of acid bile into the stomach; and from the important connexions that subsist between it and every other part of the animal economy, it becomes necessary to attend particularly to the condition of this central organ, until its compound actions be restored, and then to return to the original seat of the disease. We are here to use those tempering shifts, calculated, in medical language, to obviate occasional symptoms." Our first efforts, under such circumstances, should tend to promote the removal of the irritating cause. For this purpose, diluent liquors of various kinds are recommended — such



such as chamomile tea—least water—simple tepid water &c. When a com-
 plicated, a variety of means are employed to calm the irritability, and
 relieve the tone of the organ. Of these, the effervescent draught, vari-
 ous preparations of opium, lime water and milk, the sipping
 of boiling hot water, the warm bath, with anodyne enemata
 and fermentations to the part of the stomach, are among the most
 important. Even here, however, there are few means that prove
 more effectual than the exhibition of calomel, in very minute
 doses; for its effect is, not confined to increasing the activity of the
 secretory function of the liver, when in a sluggish state, it being
 equally efficient to reduce it when in excess; its tendency, when
 acting, being to restore the action of the liver, whether deficient
 or excessive, to their natural and healthy state. [Amu.]

The affection of the bowels that will be most apt to demand
 attention, is a spontaneous diarrhoea, which, though arising
 from the irritating character of the morbid matters in the
 prima via, may be mistaken, and an attempt made to
 check it with spirits and astringents. If such a practice
 should be adopted, it will not fail to exercise a very injurious effect.



effect upon the system, and prove entirely unsuccessful in the radical removal of the complaint. There is here as much need for purgative medicines as in actual constipation; and the stools are found to be diminished in frequency, and quantity, instead of being increased, by the operation of these medicines. By restoring, at the same time, the healthy secretion of bile, the ingesta are thereby more completely assimilated, and the sacculent part aided in its descent; so that the morbid stimulant, which produced the diarrhoea, no longer acts upon the mucous lining of the intestines, and the diarrhoea itself is consequently removed.

On recovery, the patient should be cautious to guard against all irregularities in diet, avoiding such articles as readily become acrid, and using such only as are light and nutritive. He should also guard against all sudden transitions of temperature, be regular in his habits, prudent in his exercise, and temperate in his enjoyments; which constitute the chief secrets in hygiene.

